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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/667,549

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EXAMINER

TRUONG, CAMQUY

ART UNIT

PAPER NUMBER

2195

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/667,549	Applicant(s) KANADE, UDAYAN RAJENDRA	
	Examiner CAMQUY TRUONG	Art Unit 2195	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 26 November 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-6,8-15,17- 23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 5-6, 8, 13-14, 20-23 is/are rejected.
- 7) ☒ Claim(s) 3-4, 9-12, 15, 17-19 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Claims 1, 3-6, 8-15, 17-19, and 22-23 are presented for examination.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 20-21, and 22-23 are rejected under 35 U.S.C. 101 because they are directed to non-statutory subject matter.

Claims 20-21 are rejected under 35 U.S. C. 101 because the claimed invention, appearing to be comprised of software alone without claiming associated computer hardware required for storing and execution, is not supported by either a specific and substantial asserted utility (i.e., transformation of data) or a well established utility (i.e., a practical application).

As per claims 22-23, the claim “the computer program product for ...” are no more than non functional described materials. There is no interaction among programs to produce tangible result.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

3. Claim 1 is rejected under 35 U.S.C. 102(a) as being anticipated by Santos-Gomez (U.S. Publication 2003/0065705).

4. As to claim 1, Santos-Gomez teaches a method for programming a multithreaded application to minimize thread switching overheads and memory usage during processing of the multithreaded application, the method comprising:

a. writing a plurality of errands, the plurality of errands being functions performing specific tasks that collectively constitute a thread functionality (paragraph 010);

forming at least one itinerary corresponding to the thread, the at least one itinerary controlling the execution of the plurality of errands in the desired manner (paragraph 26).

5. Claims 5-6, 8, and 13-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Davis et al. (U.S. Patent 5,357,617) in view of Lenz et al. (U.S. Patent 6,512,594).

6. As to claim 5, Davis teaches a method for executing a multithreaded application, the multithreaded application comprising a plurality of threads, the plurality of threads comprising a plurality of standard threads and a plurality of itinerarized threads, the plurality of itinerarized thread comprising standard thread constructs and at least one itinerary, the at least one itinerary being list of a plurality of errands, the plurality of errands being functions performing specific tasks, the method comprising:

a. compiling the multithread application (col. 4, lines 36-45);

c. executing the plurality of threads by running the standard thread constructs in a normal mode, the normal mode of execution being thread execution in accordance with a standard thread execution methodology (col. 4, lines 48-58; col. 7, lines 47-51), the normal mode execution of a thread being carried out using an execution stack associated with the plurality of thread (col. 7, lines 3-22);

d. executing the at least one itinerary of the plurality of itinerarized thread in an itinerary mode, the itinerary mode being a special thread execution scheme for executing a complete itinerary, (col. 4, lines 48-58; col. 7, lines 47-51); and

e. exiting the itinerary mode of execution when the complete itinerary corresponding to the at least one of the plurality of itinerarized threads has been executed, the at least one of the plurality of itinerarized threads being subsequently executed in normal mode (col. 7, lines 3-22).

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7. Davids does not explicitly teach the threads being carried out using a kernel stack. However, Lenz teaches the threads being carried out using a kernel stack (col. 3, lines 18-33).

8. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teaching of threads being carried out using a kernel stack as taught by Lenz because this would increase the throughput of the processor and reduce the latency of shorter tasks.

9. As to claims 6, 8, Davis teaches the itinerary mode execution is carried out after preempting the at least one of the plurality of itinerarized threads running in normal mode in response to a request for running the at least one itinerary on behalf of at least one of the plurality of itinerarized (col.2, lines 21-25; col. 7, lines 38-52).

10. As to claim 13, Davids teaches a multithreaded application processing system executing a multithreaded application, the multithreaded application comprising a plurality of threads, the plurality of threads comprising a plurality of standard threads and a plurality of itinerarized threads, the plurality of standard threads having been written using standard thread methodology, the plurality of itinerarized threads comprising standard thread constructs and at least one itinerary, the at least one itinerary being lists of a plurality of errands, the plurality of errands being function performing specific tasks, the system comprising:

- a. a compiler compiling the multithread application (col. 4, lines 36-45);
- b. a memory storing information related to the plurality of threads (col. 2, lines 25-28), the memory comprising:
 - i. a plurality of thread stacks, each of the plurality of thread stacks being associated with at least one of the plurality of threads (col. 7, lines 3-22), the plurality of thread stack being stored with context information pertaining to the plurality of threads, the context information being the information set required for processing of the plurality of thread (col. 8, lines 63-66); and
- c. a processor processing the plurality of threads, the processor accessing the memory for information pertaining to the plurality of threads (col. 6, lines 35-37); and
- d. the operating system executing the at least one itinerary in an itinerary mode, the itinerary mode being a thread execution scheme for executing a complete itinerary (col. 2, lines 42-64).

11. Lenz teaches a kernel stack, the kernel stack being used by the plurality of itinerarized threads while the at least one itinerary is being processed (col. 3, lines 18-33), and an operating system scheduling and managing execution of the plurality of thread (col. 2, lines 8-11); the operating system executing the plurality of standard threads and standard thread constructs of the plurality of itinerarized threads in accordance with a standard execution methodology (col. 3, lines 18-33).

12. As to claim 14, Lenz teaches the multithreaded application processing system utilizes multiple processors; each of the multiple processors having a separate kernel stack associated with it the memory (col. 5, lines 31-48).

13. Claims 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lenz et al. (U.S. Patent 6,512,594) in view of Gottlieb (U.S. Patent 6,298,431).

14. As to claim 22-23, Lenz teaches:

a compiler compiling the multithread application (col. 4, lines 16-29);

a program instruction for scheduling the plurality of thread for execution (col. 2, lines 8-11);

The plurality of standard threads constructs of the plurality of itinerarized threads being executed using thread stacks associated with the threads as execution stacks the at least one itinerary of the plurality of itinerarized threads being executed using kernel stack as their execution stack (col. 3, line 18-33).

15. Lenz does not explicitly teach executing the plurality of thread in a manner that minimizes thread switching overheads and memory usage during the execution.

However, Lenz teaches executing the plurality of thread in a manner that minimizes thread switching overheads and memory usage during the execution (col. 7, lines 51-63).

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16. It would have been obvious to one of ordinary skill in the art at the time the invention was made that to incorporate the teaching of executing the plurality of thread in a manner that minimizes thread switching overheads and memory usage during the execution as taught Gottlieb because this allow to improve processor performance during multithreaded processing.

Allowable Subject Matter

17. Claims 3-4, 9-12, 15, 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

18. As per claims 20-21, they have allowable subject matter and would be allowable if they overcome 101 rejection.

Response to the argument

19. Applicant's arguments filed 11/26/07 for claims 1, 3-6, 8-15, 17-19, and 22-23 have been considered but are moot in view of the new ground(s) rejection.

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Conclusion

20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Camquy Truong whose telephone number is (571) 272-3773. The examiner can normally be reached on 8AM – 5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng-Ai An can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-3756.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIP. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

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have questions on access to the Private PAIP system, contact the Electronic Business Center (EBC) at 866-217-9197(toll-free).

/C. T./

Examiner, Art Unit 2195

/Meng-Ai An/

Supervisory Patent Examiner, Art Unit 2195